

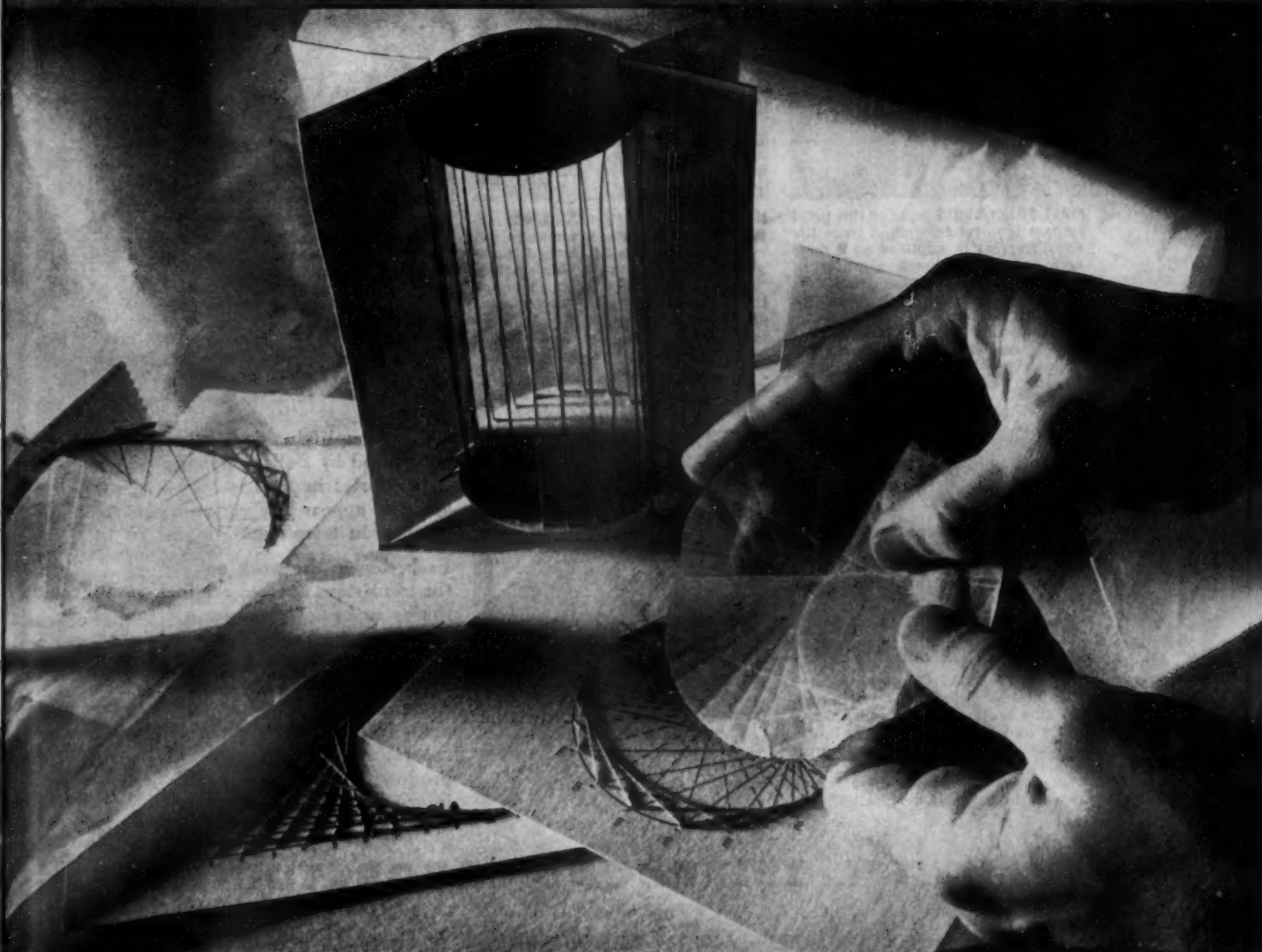
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JUNE 7, 1952

# SCIENCE NEWS LETTER

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THE WEEKLY SUMMARY OF CURRENT SCIENCE



Paperfolding Curves

See Page 362

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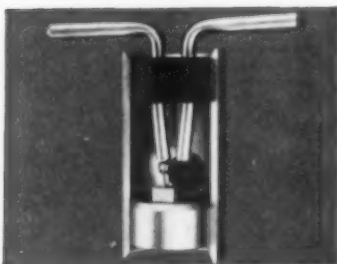
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TECHNOLOGY DEPT.

# THE TRANSISTOR

## A picture report of progress



**FIRST TRANSISTORS** were of this point contact type (picture about twice life size). Current is amplified as it flows between wires through a wafer of germanium metal. These transistors are now being made at the Allentown plant of Western Electric, manufacturing unit of the Bell System. They will be used in a new selector which finds the best routes for calls in Long Distance dialing.



**NEW JUNCTION TRANSISTORS**, still experimental, also use germanium but have no point contacts. Current is amplified as it flows through germanium "sandwich"—an electron-poor layer of the metal between two electron-rich ends. This new transistor runs on as little as *one-millionth* of the power of small vacuum tubes.



**MUCH HAD TO BE LEARNED**, especially about the surface of germanium and the effect of one part in a million of alloying materials. Transistors promise many uses—as amplifiers, oscillators, modulators . . . for Local and Long Distance switching . . . to count electrical pulses.



**ASSEMBLY PROBLEMS**, such as fixing hair-thin wires to barely visible germanium wafers, are solved by new tools and mechanized techniques. Finished transistors withstand great vibration and shock. Engineers see many opportunities for these rugged devices in national defense.



**MOIST PAPER AND COIN** generate enough current to drive audio oscillator using junction transistors. Half as big as a penny matchbox, an experimental two-stage transistor amplifier does the work of miniature-tube amplifiers ten times larger.

**A** tiny amplifying device first announced by Bell Telephone Laboratories in 1948 is about to appear as a versatile element in telephony.

Each step in the work on the transistor . . . from original theory to initial production technique . . . has been carried on within the Laboratories. Thus, Bell scientists demonstrate again how their skills in many fields, from theoretical physics to production engineering, help improve telephone service.

## BELL TELEPHONE LABORATORIES

*Improving telephone service for America provides careers for creative men in scientific and technical fields.*



## MEDICINE

# Atherosclerosis Detection

Public Health Service scientists discover five substances in blood involved in normal prevention of hardening of the arteries. Considered a "sizable break."

► A STEP toward early detection and stopping of artery hardening before it has reached a serious stage has been taken by Drs. Christian B. Anfinsen, Ray K. Brown and Edwin Boyle of the National Heart Institute of the U. S. Public Health Service in Washington.

The step they have taken consists essentially in the discovery that five substances in blood and body tissues are involved in the mechanism which normally prevents development of the serious kind of artery hardening called atherosclerosis.

The discovery will not change the treatment of artery hardening within the next year. It may take that long or longer before detection tests on patients can be made. Working out suitable treatment may take even longer. But the discovery is considered a "sizable break" in understanding the underlying mechanism of atherosclerosis.

In atherosclerosis, fatty acids, cholesterol and phospholipids deposit in little spots along the walls of arteries. Later these spots calcify and harden. Hardened arteries force the heart to pump blood at higher pressure and the increased work in time damages the heart.

The fatty acids, cholesterol and phospholipids get into the blood from food. The blood has a milky appearance after a meal heavy in fat. In normal persons this milkiness is cleared within a few hours. In persons with atherosclerosis and in rabbits fed fatty diets the milkiness is not cleared. Scientists have therefore considered atherosclerosis due to a fault in the body's handling of fat.

Heparin, a blood chemical known for its anti-clotting action, has recently been found capable of clearing the milky-looking blood after fatty meals. Now Dr. Anfinsen and associates find that heparin plus a protein in blood plasma plus a substance in body tissues act together to produce a clearing factor. The clearing factor, however, does not clear milky-looking blood unless a fifth substance, called a coprotein, is present.

Atherosclerosis presumably may result if any one of these substances is lacking or if they are present but fail to act together in the normal way.

The National Heart Institute scientists have now separated the four substances besides heparin which are involved in blood clearing. They do not yet know what the substances are chemically. They have labelled them  $P_1$  for the protein factor in plasma,  $T$  for the tissue substance,  $CF$  for the clearing factor and  $P_2$  for the coprotein.

Next step on the research program is to obtain  $P_1$ ,  $T$ ,  $CF$  and  $P_2$  in pure form. Then will come tests of patients' blood to see which, if any, is lacking in atherosclerosis. After that, treatment to supply the lack can, it is hoped, be worked out.

Details of the research so far are announced in the journal *SCIENCE* (May 30).

*Science News Letter*, June 7, 1952

## ASTRONOMY

## Famous Exploding Star Flares Brightly Again

► A STAR famous for its violent outbursts has exploded again.

First known to explode in 142 A.D., Eta Carina is once again increasing in brightness. If this outburst is as violent as the one a hundred years ago, the star may once again rival in brilliance the brightest star in the sky, then fade to obscurity.

Dr. Olin J. Eggen of the University of California's Lick Observatory, Mt. Hamilton, Calif., has just returned from the Com-

monwealth Observatory in Canberra, Australia. While there he and a French astronomer, Dr. Gerard de Vaucouleurs, searched for the intriguing star, visible only from the southern hemisphere, just to be able to say they had seen it.

At the expected location they found a star four times as bright as Eta Carina when last reported. Special photoelectrical equipment showed the star to be brightening slowly, possibly because of a new explosion.

*Science News Letter*, June 7, 1952

## ENTOMOLOGY

## Sick Leaves More Nutritious to Pests

► SOME INSECTS and snails prefer diseased plants as food and this food preference seems to benefit them nutritionally.

Dr. C. E. Yarwood, plant pathologist at the University of California's College of Agriculture, Berkeley, has found that pests, in many cases, prefer diseased leaves to healthy ones. Tests show that the diseased plants actually have a higher nutritional value in plant tissue.

Samples of rust-infected bean leaves analyzed by Alice P. Hall of the home economics laboratory showed up to 20 times the B-complex vitamin pantothenic acid in normal bean leaves.

Tobacco mosaic virus has 10,000 times more concentration in rust-infected bean leaves than in normal leaves.

*Science News Letter*, June 7, 1952



**ICE-GATHERING CYLINDERS**—Controlled from inside the plane, these automatic devices pop from the nose, revolve 30 to 40 seconds while ice collects, then retract into refrigerated chambers. From the amount of ice collected and the water weight when melted, the icing rate can be determined. Ice-gathering devices have previously been manually operated.



## AERONAUTICS

# Aircraft Noise Problem

**Distress caused by noisy planes affects more and more people as more powerful propulsion systems come into wider use. No easy solution seen.**

► NO EASY and inexpensive solution to the aircraft-noise problem is available at present, according to a report of the National Advisory Committee for Aeronautics. The conclusion is the result of a survey made by Harvey H. Hubbard, of the NACA's Langley Aeronautical Laboratory at Langley Field, Va.

Aircraft noises are particularly distressing to persons living near airports where airplanes are constantly taking off and landing, but they are also of concern to others when low-flying planes pass overhead, and they are of concern to crew and passengers on board. Real estate values near airports are often low because of the noise nuisance of arriving and departing planes.

The principal sources of aircraft noises are the propellers, the engine, and the turbulence generated in the boundary layer of the airplane as it moves through the air. Reductions in propeller and engine noises are possible in some cases, Mr. Hubbard states, but only if a possible performance penalty is acceptable.

The problem of aircraft noise and its reduction has been of interest for many years, but it is becoming of greater concern because of higher noise levels from the more powerful propulsion systems now in use. NACA, other government agencies and the aircraft companies are continuing their basic studies in an attempt to solve the problem.

One way to decrease propeller noise is to use more propeller blades and decrease the speed with which the tips of the blades rotate in the air. This is effective when the

tips travel at a speed less than that of sound, but only a relatively small benefit results if the tips are traveling at supersonic speeds.

The main source of noise from the reciprocating engine is the exhaust. The exhaust-noise intensity depends on the type of manifold system used and, in some instances, may be about the same as the propeller noise.

As engine rotating speed increases, exhaust noise increases at a slower rate than does the propeller noise. When some provision is made to reduce propeller noise, the exhaust noise must be reduced in order to achieve effective over-all noise reduction.

Science News Letter, June 7, 1952

## INVENTION

## Two Inventions Make Fabrics Water-Repellent

► TWO NEW, related methods of waterproofing both natural and artificial fabrics so they stand up to laundering better and are easier to handle have received patents from the government.

The inventor is Firth L. Dennett, Midland, Mich., who assigned his patents, numbers 2,588,365 and 2,588,366 to the Dow Corning Corp., Midland.

According to one patent, the material to be made water-repellent is wetted with a mixture of two organosiloxane polymers and then heated at temperatures of from 100 to 475 degrees Fahrenheit for a short period of time. This treatment, the inventor says,

will render the material substantially water-repellent even after laundering or dry cleaning. It also eliminates or materially reduces "Mark-offs," lines which appear where materials made water-repellent by other methods have been folded or creased.

The second method uses a mixture of three organosiloxane polymers, but the same heat treatment. Other methods using siloxanes, the inventor says, made smooth-fibered fabrics, such as rayon and nylon, too slippery. This affects handling and cutting. His method, the inventor claims, eliminates this problem.

Science News Letter, June 7, 1952

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What is the record speed of winds at 65 miles above the earth's surface? p. 358.

## CLIMATOLOGY

# Climatic Change Puzzle

Variations in amount of heat received from sun due to wobbling in earth's motion are "real," but alone do not account for Ice Ages, new orbital calculations show.

► HOW WOBBLING of the earth's motion around the sun changes our climate over thousands of years is a puzzle scientists are still trying to solve.

New calculations on changes in the earth's orbit for the last 1,000,000 years have just been revealed by Drs. Dirk Brouwer and A. J. J. van Woerkom of the Yale University Observatory, New Haven, Conn. They show variations in the amount of heat received from the sun that are "real and must have affected climatic conditions."

Yet the same new figures also show that the changes in the earth's orbit alone cannot account for the Ice Ages, recently fairly accurately dated by the radioactive carbon calendar.

The puzzle is not a new one for scientists. The theory that changes in the earth's motion around the sun can account for the Ice Ages was originally proposed in 1875 by the Scottish scientist James Croll. Later it was modified by the Yugoslav astronomer, Milankovitch, and the Yale astronomers now have again examined the problem.

For latitudes such as the United States, the amount of heat received from the sun in the summer season varies with a period of 21,000 years, their new calculations show. During this cycle, the date of the earth's closest approach to the sun, now early in January, runs through the year. Lake deposits found in the western United States have a similar 21,000-year cycle.

For higher latitudes, the main variation in heat received from the sun is due to changes in obliquity, which is the tilt of the earth's equator to the plane of the earth's orbit. Small changes in the obliquity can cause "significant changes in the amount of heat received by the earth," the scientists state.

At a latitude of 65 degrees north, about on a line with Nome, Alaska, changes can amount to as much as a two and a half percent difference in the amount of heat received for the summer half of the year. Four sharp dips were found during the last 300,000 years, and these were thought to be related by those who favored the Milankovitch theory to the times of advances of great glacial ice sheets. The dips occurred at about the same time in the northern and southern hemispheres, but are not close enough to the actual dates to account for the Ice Ages.

It is known that there have been a number of separate glacial advances, which geologists generally divide into only four or

five periods. These ice advances have been separated by long interglacial stages with relatively warmer climates. It is believed that we are now living in the closing stage of a glacial period.

Science News Letter, June 7, 1952

## PSYCHOLOGY

## Popular Grandmas Must Be Helpful Around Home

► GRANDMA, IF she wants to make a hit with her college student granddaughters, must keep up with world affairs, but she must also be helpful around the home. She must remember her grandchildren with special little attentions, but must be independent and not all wrapped up in the children.

What young girls like and dislike about their grandmothers was revealed to Dr. Ruth Staples, psychologist of the University

of Nebraska, Lincoln, Neb., when she questioned 107 college women.

The greatest number, 46.7%, mentioned liking a grandmother who is considerate of others. A total of 44.9% liked her for making and doing special things and the same proportion mentioned that she adjusts to changes in customs and ideas; almost as many appreciate her enjoying the grandchildren's interests and accomplishments.

Leading cause of dislike is her interference with or criticism of parental discipline. Almost as unpopular is a tendency to nag and boss.

In spite of their pleasure in thoughtful gifts from grandma, the girls do not like to feel that grandmother is using the gift to bid for affection. They do not like the grandmother who is snoopy or prying or who tries to run everything.

They appreciate the grandmother to whom they can go for wise guidance and understanding; they do not want her to try to appear younger than she is.

Details of the study are reported to the American Home Economics Association in the JOURNAL OF HOME ECONOMICS (May).

Science News Letter, June 7, 1952

## MEDICINE

## Isoniazid New Name For New Anti-TB Drug

► THAT NEW anti-TB drug you have been reading about has been called by six or seven different names. The World Health Organization has decided to end the confusion, if possible, by establishing one common, non-proprietary name for use the world over.

Isoniazid is the name WHO has picked, the office of the U. S. Pharmacopoeia, New York, has announced.

Chemical names for the drug are isonicotinic acid hydrazide and isonicotinyl hydrazide. Some doctors have shortened these to INAH and INH. Trade names for the drug are Nydrazid (Squibb) and Rimifon (Hoffmann-LaRoche).

Science News Letter, June 7, 1952

## METEOROLOGY

## Hurricane Watch Begins June 16 in Caribbean

► PLANS HAVE been completed for this season's hurricane watch and it will go into effect June 16. The hurricane watch is a joint project of the U. S. Navy, Air Force and Weather Bureau.

Average date for the first hurricane of the season is about the end of July. Last year, however, a new record was set when a hurricane developed east of Florida on May 16. None had started so early since records have been kept.

Officials assure that, if a hurricane develops before June 16, the planes and radar necessary to track it can be mobilized and



**DIRECT POSITIVE IMAGE—**  
*A shadowed electron micrograph, printed directly on reversing photographic paper, shows the platelets of carbide, or cementite, that have been extracted from steel, magnified 40,000 times. The replica surface is the reverse of the steel surface, the depressions being actual projections on the original specimen.*



put into operation almost instantaneously, as was done last year.

It is not yet possible to predict that a hurricane will start at such and such a time or in such and such an area, but once it starts, perhaps around the Cape Verde islands, it is soon spotted and tracked until it dies.

Navy or Air Force planes take off from Florida fields and fly to the storm. They penetrate the gale-like winds of the hurricane right through its most violent phases until they reach the usually calm "eye" or center of the storm. On the entire trip measurements of air pressure, wind velocity and the strength and direction of both the winds and the hurricane as a whole are taken and radioed back to the mainland. When the storm is within range, about 200 miles, radar can supplement the dangerous work of the planes.

With these observations, a clear picture of the path of the hurricane can be made and predictions as to which way it will go in the future are possible. Thus residents of threatened areas can be warned in time to take the necessary precautions.

Science News Letter, June 7, 1952

#### PHYSICS

### Wind: 1,100 Miles Per Hour At 65 to 100 Miles Up

► WINDS OF more than 1,100 miles an hour—a world's record—have been measured 65 to 100 miles high in the sky.

The announcement was made by Dr. G. J. Phillips, Cavendish Laboratory, Cambridge, England, and was the result of work done in England, Canada and here. Two National Bureau of Standards scientists, C. D. Salzberg and Reynold Greenstone, handled the American portion of the investigation.

Changes in the speed of wind that high up seem to be associated with magnetic storms, Mr. Greenstone told SCIENCE SERVICE. Dr. Phillips measured his record-breaking windstorm during a magnetic storm on Oct. 28, 1949. However, his finding was not announced until now.

The speed of winds up that far, in what scientists call the ionosphere, is measured by radar-like instruments that assess the electronic activity. Average winds at that altitude travel between 150 and 200 miles per hour.

Space ship navigators need worry very little about these speedy winds. A thousand-mile-an-hour wind at 65 miles altitude would only have the force of a one-mile-an-hour wind at sea level. This was figured out by Mr. Greenstone, taking into account the fact that there is about one-millionth the amount of air at that height for the wind to push around.

Dr. Phillips reported his findings in the JOURNAL OF ATMOSPHERIC AND TERRESTRIAL PHYSICS.

Science News Letter, June 7, 1952

#### MEDICINE

## Drug Hope Aids TB Patients

Even patients who do not get the new anti-tuberculosis drug, isoniazid, are helped by it since many who might leave hospital, stay in hope of getting it.

► THE NEW anti-tuberculosis drug, isoniazid or INAH for short, is helping many tuberculosis patients who so far have not gotten any of the drug.

This important benefit from the drug and newspaper publicity about it was brought out by Dr. R. J. Anderson of the U. S. Public Health Service at the meeting of the National Tuberculosis Association in Boston.

The patients being helped are those who would leave hospitals against medical advice. Because they have heard about the new drug, they are willing to remain in the hospitals in the hope of getting it later. Meanwhile, they may benefit from the rest and other treatment they have been getting, though the slow improvement under such treatment is often discouraging.

A second kind of by-product benefit Dr. Anderson foresees from the new drug is the increased stimulus it should give to finding and bringing under treatment the 150,000 persons in the United States who have active TB and do not know it.

"INAH has put tuberculosis on the front pages, dramatically bringing it to the attention of the people," Dr. Anderson said.

"Many members of the general public believed the disease vanquished years ago. Regardless of the efficacy of INAH, I think we would be wise to make capital of the renewed interest in tuberculosis which announcement of the drug has engendered."

The "lock and key" method of getting patients with tuberculosis under treatment and away from the community where their germs endanger others has proved successful in Seattle, Wash., Dr. Cedric Northrop, tuberculosis control officer of the Washington State Department of Health, declared.

Patients who refused treatment or tried to leave hospitals against medical advice are usually kept in locked wards for two weeks at Firland Sanatorium, Dr. Northrop said. Then they are transferred to the regular wards, subject to good behavior.

The patients thus forcibly isolated have not become bitter or antagonistic. On the contrary, Dr. Northrop reported, almost all of those isolated by legal measures proved tractable and capable of being managed when they learned they could be restrained if they failed to cooperate.

INAH is "not the quick and easy way to cure TB," Dr. Ross L. McLean of the Veterans Administration, Washington, D. C., declared in summing up VA hospital experience with it so far.

"But its failure to live up to the early ballyhoo and the emergence of resistance is no reason," he declared, "to turn about and chuck it in the waste basket."

"It is certainly at least next in line to streptomycin in effectiveness and there remains," he emphasized, "a vast potential field of usefulness to be explored."

Science News Letter, June 7, 1952

#### CHEMISTRY

### Battery Separator Stops Loss From Drying Wrinkles

► A NON-WRINKLE type of automobile storage battery separator is expected to result from research being done by Dr. Arthur B. Anderson of the University of California's forest products laboratory, Berkeley, Calif. It may help to lower prices of batteries.

At the present time, wood separators in car batteries must be kept wet from the time they are chemically treated by the manufacturer for removal of certain compounds until they are installed in batteries. If they dry out, they wrinkle so badly they are useless.

Based on previous experiments in drying lumber by solvent seasoning process, Dr. Anderson has satisfactorily dried a few of the separators so that they remain perfectly flat and smooth.

The drying process is a simple one of soaking the separators in a special liquid which replaces the water. When the liquid dries out, the wood does not warp or crack.

Dr. Anderson is now drying more of the wooden pieces for actual tests in batteries. Dry separators would be easier to handle.

Science News Letter, June 7, 1952

#### AERO-MEDICINE

### Pilots Warned Against Use of Reducing Drug

► PILOTS WORRYING about their waist lines had better do their reducing without use of drugs such as amphetamine, benzedrine and dexedrine, the Civil Aeronautics Administration has warned.

Two fatal accidents in England involving pilots who were dieting and taking dexedrine in an effort to lose weight led to the CAA warning and a similar one to Canadian pilots from the Director of Air Services of Canada.

Science News Letter, June 7, 1952



**LARGEST HELICOPTER**—The world's largest helicopter is now undergoing "tie-down" tests at Hughes Aircraft Company airport in Culver City, Calif. Known as the XH-17, it is powered by two turbojets and designed for short-range moving of heavy military equipment.

## METEOROLOGY

## Weather Data From Arctic

Balloons will be launched from a floating "ice island" to probe the secrets of our weather at its place of origin. Two other such islands now known.

► **BALLOONS** will soon be launched regularly from an "ice island" drifting in the Arctic Ocean close to the North Pole to probe the secrets of the "home" of our weather. Hydrogen to send them up 40,000 to 50,000 feet will be generated on the 12-mile-long island by a permanent crew of Air Weather Service men.

The men are now sending surface weather observations back to the states four times a day and these observations are being used by the Air Force and the Weather Bureau to give us more accurate weather forecasts. Since what happens high in the air above the North Pole has an even more important effect on this country's weather, meteorologists are eagerly awaiting the start of these farthest north upper air observations.

The ice island, known as T-3, is the last of three such ice formations discovered in the Arctic Ocean by Air Weather Service crews in the past five years.

T-1, the first island discovered, was vastly different from the much smaller and thinner ice floes which cover the surface of the Arctic Ocean. More than 200 square miles in area, and more than 100 feet thick, the island was tracked for three years. It was then lost, but recently crews have seen it grounded on Ellesmere Island, northwest of Greenland.

T-2, a little smaller, may have a different career. When last seen a few months ago, it seemed to be undecided whether to follow the East Greenland current down into

the Atlantic or to circle back around the Arctic Ocean again.

T-3 may some day be in the same indecisive position, but right now it seems to be sticking pretty close to the North Pole. Its present position is 88.4 degrees north by 160 degrees west. It is the only island which has been occupied. Planes as large as a C-54 have landed on it, but the weather crew is regularly supplied by C-47's. The crew is under the command of Lt. Col. Joseph O. Fletcher, who is credited with the discovery of the islands.

In addition to the meteorological crew, a civilian geophysicist, Dr. Albert P. Cray of the Cambridge, Mass., Air Force Research Center is on the island. He is taking seismic and gravitational observations. Shortly, an oceanographer will join the crew and it is expected that there will be visits from other scientists. Right now they are all living in continuous daylight at temperatures which range downward from zero degrees Fahrenheit.

Hopes that there might be more such ice islands in the Arctic were pretty well dashed last year when an extensive reconnaissance was carried out over a period of six weeks.

The reconnaissance covered more than 400,000 square miles of the Arctic Ocean and no new ice islands were found. The ice islands are not therefore as numerous as the early successes in finding the original three islands, led Col. Fletcher to believe.

Science News Letter, June 7, 1952

## PUBLIC HEALTH

## Many Displaced Persons TB Patients Within Year

► **MANY DISPLACED** persons are being treated for tuberculosis within a year of their admission to this country, in spite of screening done in Europe to detect the disease in persons seeking entry here, Dr. Robert E. Plunkett of the New York State Department of Health reported to the National Tuberculosis Association meeting in Boston.

Dr. Plunkett served with Dr. Donald King of Boston, Dr. Robert Liggett of Denver and Dr. Ira Lewis of the U. S. Public Health Service on a board set up last year by the Public Health Service to review in Europe the clinical records of displaced persons seeking entrance into the United States.

A law now prohibits entrance into this country of any person having tuberculosis. If Congress intends to extend immigration quotas, a more realistic approach was suggested by Dr. Plunkett as follows: Appropriate funds for centers, particularly in Germany and Austria, for careful study and observation of persons who show signs of tuberculosis which cannot be definitely classified by periodic examinations only.

Funds spent on scientific clinical study and medical care of displaced persons seeking entrance into the U. S. would prevent the spread of TB by segregating infectious cases, give adequate care to these patients and provide greater assurance that fewer persons admitted to the United States would soon after require hospital care.

Science News Letter, June 7, 1952

## MEDICINE

## Boy's Blood Lacks Anti-Germ Globulin

► **THE UNIQUE** case of a child without any germ-fighting gamma globulin in his blood was reported by Col. Ogden C. Bruton, chief pediatrician at Walter Reed Army Hospital and assistant professor at Georgetown University School of Medicine, Washington, at the meeting of the American Academy of Pediatrics in Washington.

The gamma globulin part of the blood is the part that forms antibodies to fight disease germs, such as measles.

Col. Bruton's patient was an otherwise normal eight-year-old boy who had 19 attacks of blood stream infection. In 10 of these some type of pneumonia germs was found in his blood.

Tests showed his lack of gamma globulin and that his blood did not form antibodies to pneumonia germs. When gamma globulin was given to him, it disappeared completely within six weeks. Monthly doses of it have kept him free of germ poisoning for 14 months.

Science News Letter, June 7, 1952



## INVENTION

**Full Color Photos  
Sent by Wire or Radio**

► A WAY of sending full color pictures over wirephoto or radiophoto circuits has been patented by Harold Carlson, Hartsdale, N. Y. He assigned his patent, number 2,598,504, to the Times Facsimile Corp., New York.

The invention permits a full color photograph to be sent in one transmission, rather than three or four, as in previous systems.

Formerly, the inventor explains, it was necessary to break down a color photo into three separate prints containing the three primary colors, with sometimes an additional print for black. These were then transmitted one after the other, or several circuits had to be used.

Because there were differences in the successive transmissions which resulted in a distorted picture, and because of the time and high degree of skill involved, sending color photographs was never too successful.

The new method, according to the patent, provides two photoelectric eye scanners, which sweep across the photograph simultaneously. One has a current output which varies jointly with the color being scanned and the density or tone of the color. The other has a current output which varies only as a function of the density or tone of the area being scanned. Then the output currents are amplified and combined and impressed on modulators arranged to modulate a carrier current as to frequency and amplitude. One modulator represents the instantaneous color of the picture being scanned, the other the instantaneous density or tone independent of color.

The receiving station impresses the received current on a photosensitive layer or layers and the picture is reproduced thousands of miles away.

Science News Letter, June 7, 1952

## NUTRITION

**Sugar and Milk for  
Emergency Disaster Feeding**

► FOR EMERGENCY feeding of civilians in case of large scale disaster, scientists at Harvard School of Public Health have been working on combinations of sugar, dry, skimmed milk, oats and soy flour.

A biscuit bar and a mix for a sweet drink have been developed. The most desirable beverage mix, at present, contains a large percentage of sugar and dried skim milk with soy flour and cocoa, reports the Sugar Research Foundation which is helping support the Harvard research.

Dissolved in enough water to make a quart, this mixture contains approximately 1,540 calories and 60 grams of protein, supplying more than half the average person's daily requirements.

A dehydrated bar-form of ration has been produced which could be eaten as a dry bar or, when mixed with water, as a cereal. Primarily consisting of oats, sucrose and non-fat milk solids with added fruits, vegetable fat and soy bean products for flavoring as well as nutritional value, these bars have been found to be palatable. A bar of this type, taken four times a day, would more than fill an adult's daily requirements for calories and protein as recommended by the Food and Nutrition Board of the National Research Council.

Vitamin content is not of great importance in rations for short-term emergency feeding, but the bar under study does contain considerable amounts of several of the vitamins.

The sugar-dried skim milk combination is suitable for disaster feeding where victims are apt to be under considerable emotional strain and possibly injured physically. The protein part is essential to repair of body tissue and the high caloric concentration readily supplies energy.

In the case of exposure to atomic radiation, animal experiments indicate that the digestive tract is the first part of the body to show injury, and the high digestibility and bland texture of this sugar-milk combination would not further aggravate the condition.

Science News Letter, June 7, 1952

## NATURAL RESOURCES

**Sulfur Mined From  
Underground Domes**

► DEFENSE-ESSENTIAL SULFUR can now be extracted for the first time from underground salt domes at locations where fresh water is not available and the cost of piping it would be prohibitive.

Freeport Sulphur Company of New Orleans will use the new process to mine a deposit of elemental sulfur, or brimstone, at Bay Ste. Elaine, a marshy area near the Gulf of Mexico, 35 miles from the only source of fresh water.

The Freeport plant, first to use the process, itself is an innovation. It will be built on a huge barge, from which nearly 2,000,000 gallons of superheated water a day will be pumped underground to melt the brimstone.

The process consists in heating the brackish or sea water under pressure to 325 degrees Fahrenheit, more than 100 degrees above the normal boiling point, and in removing from the water all but a minute part of the corrosion-dealing oxygen.

Special controls prevent the decomposition in the salt water of scale-depositing bicarbonates, the chemicals that make water hard, leave rings on bathtubs and cause "tattle-tale" gray. At the same time, the removal of oxygen reduces corrosion which otherwise would be excessive because of the extreme heat.

Science News Letter, June 7, 1952

**IN SCIENCE**

## SURGERY

**Operation Saves Babies  
With Closed Esophagus**

► AN OPERATION which can save half or more of babies otherwise doomed to die soon after birth was reported by Drs. Brian B. Blades, Edward J. Beattie, Jr., and Vincent Iovine of George Washington University School of Medicine, Washington, at the meeting of the American Academy of Pediatrics in Washington.

The babies being saved by this operation are those born with a defect of the esophagus, or food passage. Instead of being open all the way from the throat to the stomach, the esophagus in these babies stops and is closed off part way down from the throat and there is a similar closing at the upper end coming from the stomach. Consequently the babies cannot take food in the normal way. Anything swallowed may get into the airway to the lungs, and stomach juices also may get into this airway.

The babies cannot live more than a few days unless a repair operation is performed. The operation consists essentially in opening the two closed ends of the esophagus and stitching them together to give baby a complete food passage from throat to stomach.

This operation can save 85% of "good" babies, that is healthy, strong ones that can stand the operation. Even in less favorable cases, 50% are being saved. Previously 100% died.

Science News Letter, June 7, 1952

## INVENTION

**Patent Baby Incubator  
That Keeps Inside Air Pure**

► A BABY incubator designed to prevent air from the room getting inside even while the baby is being tended has been patented by Samuel Y. Gibbon, Jenkintown, Pa. The patent, number 2,598,532, was assigned to the Children's Hospital of Philadelphia.

Air for the incubator comes from outside the room and is kept at a pressure higher than that in the room so that, when the incubator is opened, the air tends to move out rather than into the incubator. A sling can be attached to a scale through an opening at the top in order to keep a weight record without having to remove the baby from the incubator. Openings are equipped with closure sleeves so that an attendant's sterilized hands can be passed into the incubator without contamination from room air.

Science News Letter, June 7, 1952



# SCIENCE FIELDS

## INVENTION

### U. S. Patent on Soviet Liquid Oxygen Method

► PETER L. KAPITZA, Soviet Union physicist, and one of the world's leading scientists, has received a patent from the United States government. The patent, number 2,593,763, is for a process which is claimed to be "extremely efficient in refrigerating plants operating at extremely low temperatures for producing liquid oxygen and similar products."

Application for the patent was first made in Russia May 15, 1945, and in this country Feb. 20, 1946. Little has been heard of Kapitza in the past few years. Rumors have had him in Siberia for failing to leave his low temperature work for research on the A-bomb, or in a relatively obscure laboratory in Moscow.

Kapitza first made his name as a scientist at Cambridge University in England, where he delved into the secrets of how matter acts at extremely low temperatures—300 or so degrees below zero, Fahrenheit. However, in 1935, when he went back for a visit to his native Russia, the Soviet officials picked up his passport and "detained" him in Moscow.

His present patent calls for using centrifugal force in the distillation of gases and liquid gases. It is one of several patents granted the Soviet scientist, one of them almost exactly a year ago.

The National Bureau of Standards has been working extensively on separation and distillation processes in the hope that some of them may be applied to the separation of heavy hydrogen from ordinary hydrogen, a process necessary in the manufacture of the hydrogen bomb. Indications are that our scientists have been successful in this endeavor. However, they do not believe that Kapitza's present invention could be successfully adapted to this purpose.

Science News Letter, June 7, 1952

## NUTRITION

### Don't Retire From Good Eating Habits

► YOU MAY be reaching the age for retirement from your job or business. But no matter how many birthdays you have celebrated, you can never retire from the responsibility of eating the right kinds and amounts of food, government nutritionists point out.

To help you, or your family, plan the right meals for good nourishment in old age, the U. S. Bureau of Human Nutrition

and Home Economics has prepared a special booklet, called Food Guide for Older Folks.

Being badly nourished, this booklet points out, is often the reason for complaints that drag an older person down, such as a chronic tired feeling, a gloomy outlook on life, anxiety over small things, loss of sleep and even too much weight. All through life people need food that supplies protein and minerals, many different vitamins, and fuel for energy and warmth. If you have a special health problem, you should of course see your doctor about your diet. Otherwise you can safely follow the daily food guide in the booklet.

Older people sometimes do not eat enough food, relying on snacks here and there, because they have not much appetite. If your appetite needs coaxing, the following suggestions from the booklet may be helpful:

Walking or other light exercise is an appetite builder. Keeping regular meal times and making meals attractive also will help to coax back a lost appetite.

Don't forget that ways to make meals interesting are to include on your plate—

Some food of distinctive flavor, to contrast with mild-flavored foods.

Something crisp, even if it is only a pickle or a lettuce leaf, for contrast with softer foods in the meal.

Some bright-colored food, for eye appeal.

As people grow older, senses of taste and smell are less keen. So, if you find it dull eating some kinds of food that you need, give more attention to flavor and seasoning. Even a very little of a flavorful food makes a bland food more appetizing.

Science News Letter, June 7, 1952

## PHYSICS

### Amorphous Selenium Shows Good Infra-Red Qualities

► AMORPHOUS SELENIUM, an element in its non-crystalline form, has been found to have desirable optical qualities in the infra-red spectrum of light.

H. A. Gebbie and C. G. Cannon of the physics research laboratories at the University of Reading, England, report in the JOURNAL OF THE OPTICAL SOCIETY OF AMERICA (April) that lenses made of the material can have short focal lengths, yet have large radii of curvatures because the material sharply bends light rays passing through it. That high refractive index, as it is called, allows the lens to minimize focusing flaws characteristic of many lenses.

The men suggested that lenses having aperture ratio of  $f/1$ , where the diameter of the lens is about equal to its focal length, might be used as microscope condensers, and objective lenses for the spectroscopy of small specimens. They also might be used as an alternative to ellipsoidal condensing mirrors in spectrometers.

Science News Letter, June 7, 1952

## SURGERY

### TB Lung Operation Urged as Routine

► AN OPERATION to remove part or all of a tuberculous lung can now be done so effectively and safely that it should be considered as part of the treatment program planned when the patient first gets sick and not as a last resort measure, Dr. Richard H. Overholt of the Overholt Thoracic Clinic, Brookline, Mass., and Tufts College Medical School, Boston, declared at the meeting of the National Tuberculosis Association in Boston.

Figures given by Dr. Overholt and by Dr. James D. Murphy of the Veterans Administration Hospital, Oteen, N. C., bear out this opinion.

The reason such operations are now being performed increasingly is that streptomycin is used to prevent the spread of infection and prevent other complications of surgery. The new anti-TB drug, isoniazid, is also now being used for "drug coverage" in surgical cases, but it is still too new for reports of its value in such cases.

Science News Letter, June 7, 1952

## TECHNOLOGY

### Standard Ice Cream Containers for 21 States

► ICE CREAM containers in grocery store freezers of 21 states soon will be standardized as a result of action taken by the National Conference on Weights and Measures meeting in Washington to give customers more nearly what they pay for.

But a move which would require that ice cream be sold by the pound instead of by the pint was shelved for the present. Manufacturers argued that the cost of re-gearing their production lines would hit the customer squarely in his pocket book.

Standards for the new quart, half-gallon and gallon size containers become effective immediately in 21 states. The new ice cream boxes will appear as soon as they can be designed and manufactured. Half-gallon size boxes will be of two shapes, a squatty model and a more slender model, both having flat sides. Quart and gallon size containers will resemble present day boxes outwardly, but will have slightly changed dimensions.

The states affected by the new regulations are Alabama, Florida, Georgia, Indiana, Kansas, Louisiana, Maine, Massachusetts, Michigan, Montana, Nevada, New Jersey, North Dakota, Oklahoma, Oregon, Pennsylvania, Texas, Vermont, Virginia, West Virginia and Wyoming.

Four other states are in the process of adopting National Bureau of Standards Handbook 44. They are Maryland, New Hampshire, Tennessee and Wisconsin.

Science News Letter, June 7, 1952

## MATHEMATICS

# How to Fold a Curve

Waxed paper is all the material needed to paper-fold a parabola, hyperbola or ellipse. With cardboard, needle and thread, conic sections can be curvestitched.

See Front Cover

By MARTHA G. MORROW

► WAXED PAPER, cardboard, needle and thread are the intriguing materials you can use to "draw" geometric curves.

Some kids, not too interested in geometry, are now told to produce conic sections by folding paper or sewing cardboard with gaily colored thread. This kind of homework is fun, and an easy way to become acquainted with curves.

Parabolas, hyperbolas and ellipses are among the many curves that can be created both by curve stitching and by paper folding. Quite exact figures result from simple beginnings.

A point within a circle helps you paper-fold an ellipse; a point outside a circle is all you need locate for a hyperbola. Two straight lines form the framework for curve stitching a parabola.

Thread pulled tightly between two points produces as straight a line as you can draw with ruler and pencil. When many lines are involved, it is often easier and more exact to stitch them than to draw them.

If you fold a piece of paper and crease it, you again create a straight line. How much simpler and quicker to make a series of lines by creasing them than to bother with ruler and pencil.

## Waxed Paper Can Be Used

Waxed paper such as housewives often keep in the kitchen is excellent for paper-folding as it shows up the crease nicely. After creasing a number of lines, just straighten the paper out again and notice the figure created by the creases.

If you have forgotten what a parabola looks like, refresh your memory by paper-folding one. Although your figure will show up best if you use waxed paper, you can paperfold thin paper such as tissue paper or onionskin. Or if you have nothing better handy, you can use newspaper.

Draw a straight line on your piece of paper. If no ruler is available, you can use the edge of a book or magazine as your guide, or perhaps you can draw a fairly straight line freehand. Far above or below the line mark a point, which for convenience you can call F.

Fold the paper so that the point F

touches the line, and crease the paper. Fold again so that F touches another part of the line and crease. After you have made many creases in this manner, your creased lines will begin to outline a parabola.

To curvestitch a parabola, you need a needle, strong but thin thread such as button or embroidery thread, and a piece of cardboard. On the cardboard draw two straight lines which meet at a point to form an angle. On both these lines, beginning at the place where they intersect, mark off a dozen equally-spaced points. Label the points on both lines from 1, 2, 3 and so on to 12. But on one line begin numbering at the point where the lines meet; on the other line begin at the point farthest from the vertex of the angle.

To make a good-looking curve, use thread that shows up well against the cardboard. Stitch from 1 to 1, 2 to 2 and so on until all duplicate numbers have been connected. When you have finished, your stitches should outline a parabola, or, to be more exact, should form the envelope of a parabola.

## Circle With Point to Make Hyperbola

A hyperbola, which is difficult to draw even with geometrical tools, is easy to paperfold. To begin, you need draw on waxed paper only a circle and mark a point F outside the circle.

If you do not have compasses to make your circle, draw it with thumb tack, pencil and string. Stick a thumb tack in the middle of your piece of waxed paper and place a loop of thread around it. If you keep the thread taut with a pencil, the pencil will describe a circle as you move it around the tack.

Fold the paper so that F, which can be any point outside the circle, touches some point on the circle, and crease the paper. Repeat this folding and creasing operation for many points around the entire circumference of the circle and crease each fold. One of the branches of the hyperbola will begin to take shape first, but if you keep folding and creasing eventually both branches will appear.

For an ellipse you need only a large circle and a point F inside the circle. Fold the paper so that F touches some point on the circumference and crease the paper. Continue folding and creasing for many points around the entire circumference of

the circle until the ellipse becomes visible. F and the center of the circle are the foci of the ellipse thus formed.

An ellipse, you may remember, is relatively simple to draw with pencil, string and paper. You draw it pretty much the same way you would a circle, only loop the thread around two thumb tacks instead of just one. Stick a pencil inside the loop and pull the string taut, then move your pencil to all possible positions while keeping the string taut, and you draw an ellipse.

## Definition of Forms

An ellipse is usually defined as the path (called the locus in mathematics) of a point which moves in such a way that the sum of its distances from two fixed points is constant. The thumb tacks are your fixed points, and the loop of string keeps the pencil's distance from them constant. By geometry it is easy to prove that the figure formed by paper folding is likewise an ellipse.

A parabola is defined as the path of a point which moves so its distances from a fixed point and a fixed line are equal. In a hyperbola, the difference of the distances of a moving point from two fixed points is constant.

An interesting kit on curves has been designed by M. H. Ahrendt of the National Council of Teachers of Mathematics and Lt. Col. Robert C. Yates of the United States Military Academy in cooperation with SCIENCE SERVICE. So that teachers, pupils and those who remember a bit of their high school geometry can have fun with conic sections, 12,000 kits are being distributed throughout the country.

Diagrams on cardboard help those using the kits to curvestitch not just the easy-to-make parabola, but also an ellipse and hyperbola. Red and blue embroidery thread, and a large-eyed needle are supplied for making professional-looking models. Waxed paper is furnished for the paper-folding experiments. So readers can understand the relationship between the various conic sections, directions and materials are supplied for making a tricky three-dimensional double cone.

Some of the forms that can be made using materials and instructions in the kit are shown on the cover of this week's SCIENCE NEWS LETTER.

A few of these curve kits have been reserved for readers of SCIENCE NEWS LETTER. Just send 75 cents to Science Service, 1719 N St., N. W., Washington 6, D. C., and ask for the Curve Kit.

Science News Letter, June 7, 1952



## MEDICINE

**Polio Chance No Greater For Child at Summer Camp**

► THE CHANCES of a child at a summer camp getting infantile paralysis seem to be no greater than the chances of a child at home getting the disease. Parents therefore should not change their plans about sending children to camp this summer because of fear of polio outbreaks.

This advice comes from the National Foundation for Infantile Paralysis. It is based on studies in polio epidemic areas beginning in 1949, when we had the greater number of reported cases in U.S. history.

Even in a year of high polio incidence, the National Foundation recommends camps may be opened as usual in any area where there is no actual outbreak. However, children should not be admitted from an area where an outbreak exists. Parents should feel free to send their children to camps if there is no polio in their own communities or in the vicinity of the particular camps.

If one or more cases occurs in a boarding or day camp, the following precautions are recommended:

1. All children should be kept at the camp for 14 days after last contact with the patient or until the usual closing date of the camp.

2. General activity should be modified and closely supervised to prevent excessive exercise and undue mixing in group activities.

3. Children should be given a careful medical checkup daily.

4. All children with fever and suspicious symptoms should be isolated.

5. Bodily discharges should be burned with gasoline.

6. Admission of new children to camps in which poliomyelitis has been diagnosed should be discontinued.

7. The county chapter of the National Foundation for Infantile Paralysis should be notified so that it may assist in any way needed.

The decision as to closing a camp rests with the county or city Health Officer in charge. However, there is no evidence of increased hazard in keeping a camp open since exposures already have taken place by the time a case appears. When the first case has been diagnosed, many campers already have the virus in their systems. Only time will reveal those who may be susceptible to the clinical form of the disease. The usual incubation period is from 7 to 14 days. Normal camp routine should not be unduly disturbed.

Science News Letter, June 7, 1952

*Ostriches* have been known to run as fast as 50 miles an hour.

## METEOROLOGY

**This Summer Cool in N.E., Warm, Dry in Central U.S.**

► WEATHER FOR this summer has been predicted by one of the nation's expert long range forecasters, Dr. H. C. Willett, professor of meteorology at Massachusetts Institute of Technology, Cambridge, Mass. Dr. Willett is one of the few recognized meteorologists who would venture such a forecast.

The Northeast will tend to be cool and showery through the summer months, while the central states will be somewhat warm and dry, Dr. Willett predicts. West coast summer weather is usually pretty settled and Dr. Willett expects that to be the case this year too. The Southeast can expect a fairly normal summer.

The U. S. Weather Bureau's Extended Forecast Section under Jerome Namias, a former student of Dr. Willett's, refuses to predict the weather for periods longer than a month ahead, although Mr. Namias says he is working on methods of making seasonal forecasts.

Dr. Willett cautions that the summer is a much harder season to predict than the winter. The weather in the warm months is more erratic and more localized than during the winter, he says. Consequently, local variations can be expected.

Science News Letter, June 7, 1952

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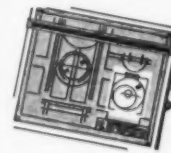
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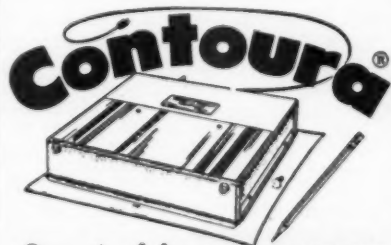
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### Colonizers of Barren Lands

► WIND-BEATEN, SUN-BAKED rocks in the driest deserts, bare bones of granite sticking out of mountainsides, glacier-dropped boulders on Arctic islands, volcanic lavas with their fires all spent, even tombstones in old churchyards—these would hardly seem promising places to go botanizing. Yet all of them will yield at least a thin harvest, if you know how to hunt for it.

You must not expect roses and orchids, of course, or even cacti and yuccas at the outset. Indeed, unless some botanist has shown you what to look for, you will take these exiguous gardens of the rocks for part of the rocks themselves, or at best for chance splashes of paint. For these first-fruits of the dead stone are mere films of life—and of life that can “play dead,” if need be, for long periods of droughty time.

These first colonists of earth's barest places are the lichens. A lichen is not a plant, in the sense that a fern or a violet is a plant; it is really a colony of plants—and of two diverse kinds of plants at that. Under the microscope, the structure of a lichen is seen to consist of a close network of fungus threads, enclosing numbers of

lowly one-celled green plants known as algae.

Fungi, being unable to manufacture their own food, have to depend on the carbohydrates and proteins prepared by the algal cells. It is assumed that the algae get some benefit from the arrangement, in the way of protection, and perhaps from the wick-like water-holding action of the fungi. Such a mutually advantageous arrangement in nature is called “symbiosis,” which is a Greek phrase meaning “living together.”

To a perhaps somewhat jaundiced eye, it looks as if the algae in a lichen complex were getting the worst of the bargain: their role appears to be like that of the helots in ancient Sparta, or of the “natives” in a nineteenth-century European colony in the tropics.

There are three general classes of algae: crustose, which are the paint-splash-like kinds, impossible to collect except by chiseling loose chips of the rocks; foliose or leaflike, which form loose, leathery or papery scales, easily picked up; and fruticose or twiggy, of which the best-known examples are the so-called reindeer moss of northern lands and the beard moss that drapes tree boughs wherever the climate is damp and cool.

Many scientists now believe that if any life at all exists on Mars, it is probably some kind of a lichen. It is suggested that the color changes observed to take place regularly on the planet could be due to such lichens.

Science News Letter, June 7, 1952

### ASTRONOMY

## Possible Tunnel on Moon

► A TUNNEL several miles long and lined with walls of glass may exist on the moon. If it does, it was probably formed by a meteor or “shooting star” passing completely through the upper portion of one of the moon's mountain ridges.

The suggestion of a tunnel on the moon comes from Dr. H. H. Nininger, director of the American Meteorite Museum, Winslow, Ariz. The entrance and exit to his moon-tunnel can be seen with a good telescope.

Through the centuries the moon has been bombarded by meteorites. As a result, it now is probably covered by a very deep mantle of light cindery rubble.

A meteorite moving 20 to 30 miles per second would vaporize the powdery dust on contact, Dr. Nininger reports in *SKY AND TELESCOPE* (June). The material lying just beyond the vaporized layer would melt and cool quickly, forming a glazed cylinder like the fulgerite left by a lightning discharge passing through sand, he points out.

A large meteorite sweeping low as it skimmed across the moon's surface could tunnel its way through the fine dust cov-

### AERONAUTICS

## American Airways Now Have Route Numbers

► AIRWAYS OVER America now have route numbers similar to those of America's highways. Pilots thus have numbered routes just as motor vehicle drivers have.

Airways running north and south have odd numbers; those running east and west have even numbers.

This new numbering system for American airways, set up by the U. S. Civil Aeronautics Administration, follows the establishment of airways equipped with omnirange stations to guide pilots on their route. On the first of this month, 45,000 miles of airways so equipped were added to the 65,000 miles still using the old style radio beam.

In most cases the numbered airways are superimposed upon, or follow rather closely, the existing routes. Referred to as “Victor” airways, they are 10 miles in width and are divided into 1000-foot vertical lanes.

Of the 45,000 miles of new airways, 35,000 miles are primary routes and 10,000 are alternate routes. To distinguish the primary and alternate routes between two terminals, one is called “east” and the other “west,” if the air pathways extend north and south. For example, if route three has an alternate, one airway would be “Victor three east” and the other “Victor three west.”

Science News Letter, June 7, 1952

### COFFEE-CAPTAN (a-furfuryl mercaptan)

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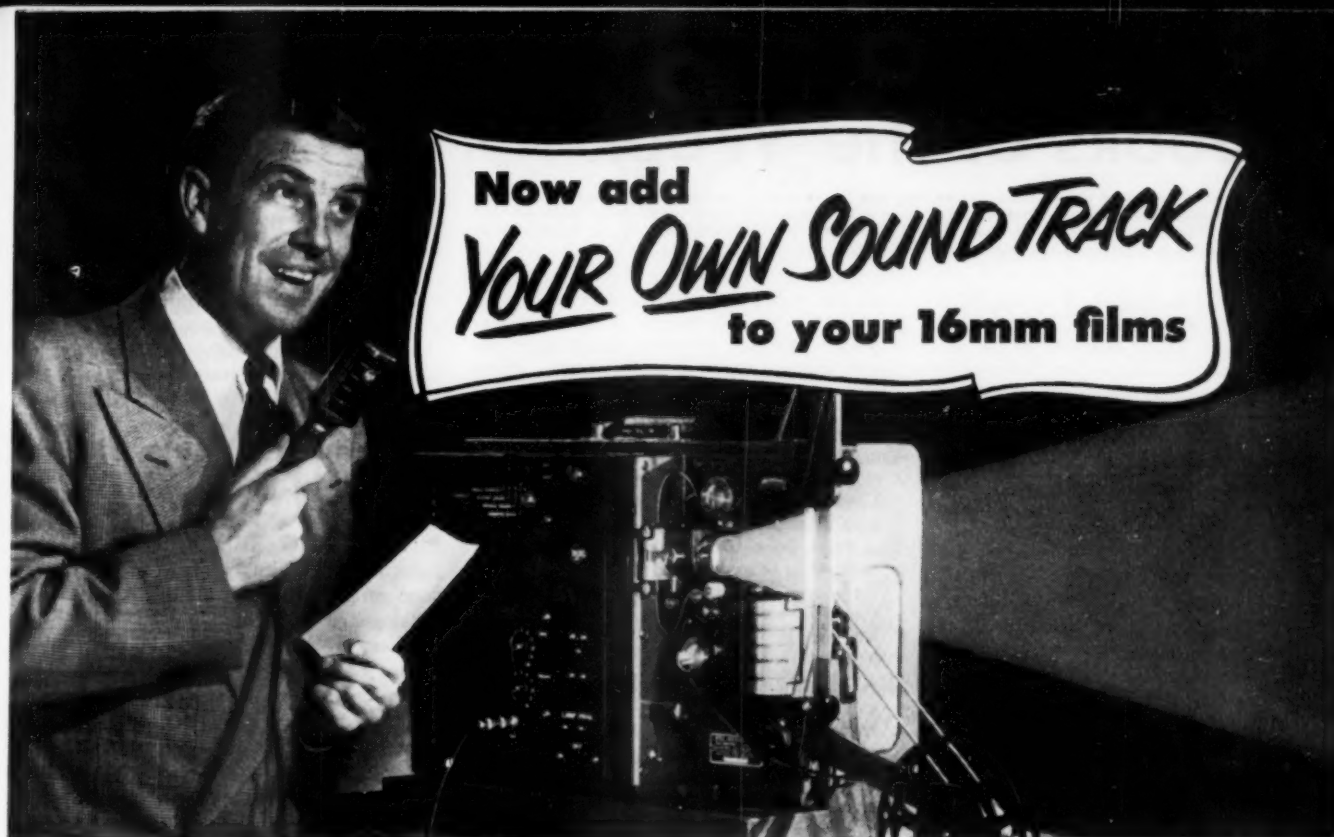
ering the moon until it struck the solid material beneath. Ricocheting off this hard submantle, it would burn its way out through the dust covering the moon. Enormous holes would mark its entrance and exit.

Two such holes have long been classified as craters, Dr. Nininger believes. In Mare Foecunditatis, on the western part of the moon, are two so-called craters, Messier and W. H. Pickering, which are very close together and differ greatly from other craters.

The lip or rim of each crater is noticeably extended in the same direction. More important, Dr. Nininger states, the two are on opposite sides of a mountain ridge several thousand feet high and 15 to 20 miles wide at this point. The shape of the holes suggests that a large meteorite did ram its way right through the ridge.

Science News Letter, June 7, 1952

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# Books of the Week

For the editorial information of our readers, books received for review since last week's issue are listed. For convenient purchase of any U. S. book in print, send a remittance to cover retail price (postage will be paid) to Book Department, Science Service, 1719 N Street, N. W., Washington 6, D. C. Request free publications direct from publisher, not from Science Service.

**THE ARTIFICIAL SATELLITE**—L. J. Carter, Ed.—*British Interplanetary Society*, 73 p., illus., paper, 75 cents. Papers presented at the Second International Congress on Astronautics tell how such a satellite could be maintained and how travel could be effected between one satellite orbit and another and how space ships could be designed, made and serviced.

**THE ATMOSPHERE**—Peter Hood—*Oxford University Press*, 64 p., illus., \$2.50. A picture book telling young people about the ocean of air in which we live, its weather and clouds.

**BEGINNING ELECTRICITY**—J. R. Eaton—*Macmillan*, 365 p., illus., \$5.50. Directed to "Anyone who is not an electrical engineer."

**CHILDHOOD EXPERIENCE AND PERSONAL DESTINY: A Psychoanalytic Theory of Neurosis**—William V. Silverberg—*Springer*, 289 p., \$4.50. Presenting the thesis that mental illness can be traced to harmful experiences occurring between birth and the age of six.

**CONTROL HIGH BLOOD PRESSURE AND LIVE LONGER**—Herman Pomeranz—*Eton*, 239 p., illus., paper, 35 cents. For the layman who suffers from high blood pressure, telling him what to avoid and what he can do without harm.

**A COURSE IN COLLEGE CHEMISTRY**—V. R. Damerrell—*Macmillan*, 587 p., illus., \$5.50. A text for beginning college students, particularly non-chemists such as home economics majors.

**DIRECTORY OF AMERICAN COUNCIL OF COMMERCIAL LABORATORIES INC.: 1952 Edition**—*American Council of Commercial Laboratories*, 73 p., paper, free upon request to publisher, 4302 East-West Highway, Washington 14, D. C. Listing the laboratory members, with their staff and activities.

**EFFECT OF AGING ON THE SOUNDNESS OF REGULARLY HYDRATED DOLOMITIC LIME PUTTIES**—Lansing S. Wells, Walter F. Clarke and Ernest M. Levin—*Govt. Printing Office*, NBS Building Materials and Structures Report 127, 14 p., paper, 15 cents.

**EFFECTS OF ATOMIC RADIATIONS ON LIVING ORGANISMS: Twelfth Annual Biology Colloquium**—Curt Stern, Leader—*Oregon State Chapter*

*of Phi Kappa Phi*, 52 p., illus., paper, 75 cents. Informal discussion of an important modern problem. Includes reports on radiation genetics, radiation measurement, effects on plants, biochemical aspects of radiation injury and medical planning for atomic defense.

**THE FIRST BOOK OF AIRPLANES**—Jeanne Bendick—*Franklin Watts*, 69 p., illus., \$1.75. A book for children about airplanes and the men who fly them.

**THE FIRST BOOK OF FISHING**—Steven Schneider—*Franklin Watts*, 44 p., illus., \$1.75. Telling the young fisherman what he needs to know about his rod, line, hooks, reels and bait as well as how to identify his catch and the fish he can buy.

**THE FLORA OF GUATEMALA**—Paul C. Standley and Julian A. Steyermark—*Chicago Natural History Museum*, 432 p., illus., paper, \$4.50.

**HIGH WATER AT CATFISH BEND**—Ben Lucien Burman—*Messner*, 121 p., illus., \$2.75. Children will like this entertaining animal story and their elders will appreciate the satire directed at the failure of humans to solve the problem of flood control until the wild creatures showed them how.

**MODERN PHYSICAL SCIENCE**—William O. Brooks and George R. Tracy—*Holt*, 586 p., illus., \$3.80. A textbook for the general education student, giving him some knowledge of the "consumer aspects of science."

**MORPHOGENESIS: An Essay on Development**—John Tyler Bonner—*Princeton University Press*, 296 p., illus., \$5.00. Considering size and patterns of growth and differentiation in various kinds of organisms.

**THE NATURE OF SOME OF OUR PHYSICAL CONCEPTS**—P. W. Bridgman—*Philosophical Library*, 64 p., \$2.75. In these lectures, given at the University of London, a Nobel laureate examines some fundamental concepts of physics, including those relating to field and empty space, thermodynamics and the conduction of electricity.

**PREHISTORIC EUROPE: The Economic Basis**—J. G. D. Clark—*Philosophical Library*, 349 p., illus., \$12.00. Telling how early man managed to make a living from the end of the Ice Age up to historic times.

**STUDIES OF PACIFIC ISLAND PLANTS: X, The Meliaceae of Fiji, Samoa and Tonga**—A. C. Smith—*Govt. Printing Office*, U. S. National Herbarium, Vol. 30, Part 4, 53 p., paper, 50 cents.

**A STUDY OF WRITING: The Foundations of Grammatology**—I. J. Gelb—*University of Chicago Press*, 295 p., illus., \$5.00. Intended to lay a foundation for a new science of writing which will attempt to establish general principles governing the use and evolution of writing.

**THEORETICAL MODELS AND PERSONALITY THEORY**—David Krech and George S. Klein, Eds.—*Duke University Press*, 142 p., illus., \$2.50. Psychologists have been looking for some way to avoid mere fact-gathering and have tried to find a means of fruitfully linking all sorts of

data. The attempt to theorize models of behavior, it is hoped, will serve to make more useful the contacts between scientists of different fields.

**THERMOSTABILIZATION OF SHELL EGGS: Quality Retention in Storage**—Harry E. Goresline, Kirby M. Hayes and Alfred W. Otte—*Govt. Printing Office*, USDA Circular No. 898, 12 p., illus., paper, 5 cents. Showing that the rate of deterioration of shell eggs in storage can be retarded by heating the eggs to 134 degrees F.

Science News Letter, June 7, 1952

## AERONAUTICS

### Rotating Red Lights Will Aid Night-Flying Safety

► ROTATING RED lights on the tail stabilizer of airliners are to be installed soon on all planes of United Air Lines as a safeguard in night flying.

These lights will not only warn other planes of the presence of an approaching plane in the air but also will indicate if the two planes are at the same altitude.

In the new installations, a sealed-beam, 100-watt lamp of approximately 18,000 candlepower is mounted under a red plastic dome atop the tail. Two reflectors are suspended over the lamp and revolve at 60 revolutions per minute. They cast fan-wise beams 180 degrees apart in the horizontal plane.

One beam is 30 degrees below the horizontal plane, the other 30 degrees above. Both beams overlap five degrees at the horizontal. The result is that the light flashes only once a second to a plane at a distance above or below it, but twice a second to a plane at the same altitude.

Science News Letter, June 7, 1952

## METEOROLOGY

### Salt Particles, Pollen Help Trace Air Currents

► WEATHERMEN CAN tell something about where the weather is coming from by finding out what else is in the atmosphere besides air and water.

Three scientists from the New Mexico Institute of Mining and Technology, Socorro, showed this by flying across the continent, taking counts of the amount of chloride particles and pollen they found in the atmosphere around the plane. Chloride is found in sea salt.

They were able to tell whether the air currents they were flying in came from the Pacific or the Gulf, or whether the air had come up from the surface by noting the number and kind of particles they collected.

The scientists were Dr. W. D. Crozier, B. K. Seely and L. B. Wheeler and they reported their findings in the *BULLETIN OF THE AMERICAN METEOROLOGICAL SOCIETY* (March).

Science News Letter, June 7, 1952

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## MEDICINE

# Transfusions Not Enough

► IDEAS ABOUT the use of whole blood transfusions to save victims of any future atomic bombings need to be revised as a result of experiments by Dr. J. Garrett Allen and associates of the University of Chicago School of Medicine.

If man responds as dogs do, transfusions alone will be of no benefit in preventing or controlling hemorrhage or in saving or lengthening life after the irradiation, their findings show. Dogs given transfusions died as soon as or sooner than dogs without transfusions when exposed to the same dose of X-rays.

For the treatment of shock from the early blast effects of an atomic burst or for correcting anemia, blood transfusions may be useful, the scientists point out. The dogs did not live long enough to develop profound anemia.

From studies with dogs exposed to X-rays and from experience with patients undergoing surgery, it appears that transfusion reactions, from minor or major incompatibility of the transfused blood, may increase

the tendency to abnormal bleeding. This can be controlled if the anti-heparin chemicals, protamine sulfate or toluidine blue, are given promptly. The Chicago group therefore advise against giving whole blood transfusions when there is a bleeding tendency without having one of these chemicals available.

Transfusions given with antibiotics, such as aureomycin, may, however, prove more helpful than blood transfusions alone.

"It could be disastrous," the Chicago scientists state, to depend on blood transfusion alone to control bleeding after atomic bombing, if humans respond as dogs do. And if blood transfusions offer as little for man as for dogs under such circumstances, blood could be used more intelligently and the limited supply channeled in directions where it would be most effective.

The studies with dogs were made by Dr. Allen and Drs. Clair E. Basinger, Jerome J. Landy, Margaret H. Sanderson and Daniel M. Enerson.

Science News Letter, June 7, 1952

## AERONAUTICS

# One Direction for Runways

► A SINGLE runway or a number of parallel runways, instead of the multitude of intersecting landing strips now provided, will feature American airports in the future if the recommendations of the President's Airport Commission are followed.

Such airports would require a long relatively narrow strip of land instead of the broad areas now needed. All approaching planes would come in at one end or the other, depending upon the direction of the wind. Building restrictions would be necessary only in the two approach areas.

The intersecting runways now provided at all major airports are to permit landings to be made directly against the wind prevailing at the time. With the lighter planes used as airliners in the past, cross winds

presented a severe hazard. With modern heavy planes now used, safe landings can be made in moderately high cross winds. Light planes, equipped with castered crosswind landing gears, can also land with safety in moderately high cross winds.

The elimination of intersecting runways will make it possible for airports to provide proper approach areas without structures of any kind or with low buildings only. This is an essential with modern heavy planes if disasters such as those at Newark airport are to be avoided.

The commission recommends that airports should have at each end cleared extensions at least a half mile long and 1,000 feet wide. Beyond that there should be fan-shaped approach zones within which construction should be kept by local zoning laws as low as possible.

With the heavy airliners now in use, longer runways are required than in the past. Transcontinental and international airports should have 8,400-foot runways, the commission states, with room to expand to 10,000 feet, necessary for the jet-propelled airliners of the near future.

The President's Airport Commission was headed by Lt. Gen. James H. Doolittle. The other members were Charles F. Horne, Civil Aeronautics Administrator, and Dr. Jerome C. Hunsaker, chairman, National Advisory Committee for Aeronautics.

Science News Letter, June 7, 1952

## ● RADIO

Saturday, June 14, 1952, 3:15-3:30 p.m. EDT

"Adventures in Science," with Watson Davis, director of Science Service, over Columbia Broadcasting System.

Dr. Marvin E. Fowler, assistant to the head of the division of forest pathology at the U. S. Department of Agriculture's Bureau of Plant Industry, Soils and Agricultural Engineering, Beltsville, Md., discusses "Menace to the Nation's Oaks."

## HORTICULTURE

# Strontium in Lime May Aid Crop and Fruit Production

► BENEFICIAL EFFECTS of liming of soils for crop and fruit production may be due to small amounts of strontium supplied along with the calcium and the correction of acidity.

Strontium sprays have corrected a whitening of peach tree leaves, called chlorosis, in experiments by Drs. Benjamin Wolf and S. J. Cesare of Bridgeton, N. J., reported in the journal, SCIENCE (May 30).

Large applications of lime or gypsum can supply considerable amounts of strontium, since a ton per acre of calcium material contains two pounds of strontium. Yet most crops remove only about 50 pounds of calcium an acre.

Science News Letter, June 7, 1952

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❁ **PICTURE-TUBE REACTIVATOR** for television repairmen can put new life into old picture tubes that have grown dim because the electron-emitting material in the cathode has become "weak." The unit will not work if the picture tube has a broken filament, shorted parts, or if it has become leaky.

Science News Letter, June 7, 1952

❁ **RUBBER CLEANER** for home use removes dust, grime and stains from rubber-coated dish drainers and other rubber household products. The cleaner polishes and protects bright-colored surfaces not only of rubber products but also of linoleum and plastic-topped tables and work counters.

Science News Letter, June 7, 1952

❁ **X-RAY MONITOR** placed beside patients undergoing radiation treatments reassures them that the treatment is confined to diseased areas of the body. The instrument is about the size of a quart fruit jar.

Science News Letter, June 7, 1952

❁ **POCKET PROTECTOR** for men's shirt, coat or vest pockets keeps pens and pencils from marking or staining the cloth. Made of a vinyl plastic, the protectors are available in white pique, alligator grain and pigskin embossed patterns, and in clear sheeting.

Science News Letter, June 7, 1952

## Do You Know?

Adding *methionine* to poultry rations, particularly during the summer months, improves feathering and growth.

Over 5,000 *caves* are already known to exist in the United States, but this is estimated to be less than 10% of the total which remains to be discovered.

A new plasticized blend of synthetic rubber and tar, designed for use on airport runways, is unaffected by hot jet blasts and resists the dissolving effects of spilled fuel, both of which are serious problems associated with jet aircraft.

Flaws in iron, steel and non-ferrous metals now can be detected quickly, without dismantling complex machinery, by a new portable electronic "eye" which uses ultrasonic waves to produce flaw-patterns on a cathode ray tube screen.



❁ **CHILDREN'S TENT** made of a vinyl plastic, as shown in the photograph, can be used for play indoors as well as out-of-doors. Easily dismantled, the tent has a base four and a half feet square, stands five feet high and will accommodate about

four children. A smaller model is large enough for two children.

Science News Letter, June 7, 1952

❁ **BALL-BEARING CUFF** links and tie clasps feature precision-made, free-moving bearings that actually spin. The novel accessories are double gold plated and come in sets of two cuff links and one tie clasp.

Science News Letter, June 7, 1952

❁ **SAFETY GRIP** for laboratory workers protects hands and provides a firm hold that permits sliding glass tubing into stoppers with less chance of breakage. Accommodating most sizes of tubing commonly used, the grip also can be employed while breaking tubing to desired lengths.

Science News Letter, June 7, 1952

❁ **RECORDING SYSTEM**, portable and magnetic, reduces motion picture and television film costs up to 75% by using a half-width (17½mm) movie film run at half-speed. A full 30-minute television program can be recorded on one reel. The unit operates either from batteries or from AC outlets.

Science News Letter, June 7, 1952

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